Post-discharge survival following pre-hospital cardiopulmonary arrest owing to cardiac aetiology

Johan Herlitz*

Division of Cardiology, Sahlgrenska University Hospital, SE 413 45 Göteborg, Sweden

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*Corresponding author.
E-mail address: johan.herlitz@hj.lgu.se
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This editorial refers to 'Post-discharge survival following pre-hospital cardiopulmonary arrest due to cardiac aetiology: temporal trends and impact of changes in clinical management' by J.P. Pell et al., on page 406

In the western world, a large percentage of patients who die so as a result of heart disease, predominantly coronary artery disease (CAD). Among these patients, the majority die prior to hospital admission because of sudden cardiac death. During the last three decades, a tremendous effort has been made in order to increase survival from out-of-hospital cardiac arrest (OHCA) via the introduction of the chain of survival concept. However, short-term survival has not improved as dramatically as was forecast.

In all probability, the decrease in the occurrence of ventricular fibrillation as the initial recorded rhythm in OHCA is a strong contributory factor to this observation. In the present article, the results also indicated a slight worsening in the short-term outcome among patients suffering from OHCA.

During the last few years, a new link in the chain of survival, the fifth link, i.e. 'post-resuscitation care', has been introduced. As a result, we have learnt that factors in the early hospital phase 'among initial survivors of OHCA' appear to influence outcome. These factors include the elevation of body temperature, the elevation of blood glucose, and the elevation of serum potassium, all of which have been shown to be associated with a worsening of the prognosis. Furthermore, treatment aspects such as lack of treatment with beta-blockers also appear to influence outcome. These factors include the elevation of body temperature, the elevation of blood glucose, and the elevation of serum potassium, all of which have been shown to be associated with a worsening of the prognosis. Furthermore, treatment aspects such as lack of treatment with beta-blockers also appear to influence outcome unfavourably.

Finally, a meta-analysis of three randomized clinical trials comparing an internal cardioverter defibrillator (ICD) with anti-arrhythmics among survivors of OHCA suggests that this device improves outcome.

Despite the fact that much of this knowledge was not available and therefore not considered in 1991-2001, there was an increase in long-term survival after hospital discharge among survivors of OHCA in Scotland. The authors have conducted the largest and most complete survey of this subject so far and the results are impressive. Three of four patients survived for 5 years after hospital discharge during the latter part of the survey. These figures indicate that the long-term prognosis among survivors of OHCA does not differ markedly from that of survivors of myocardial infarction. However, the mean age of survivors of OHCA was much lower (65 years) than that of survivors hospitalized because of acute myocardial infarction, for whom mean age is >70 years.

The authors speculate that if ICD and coronary artery bypass grafting were utilized 100%, survival might increase to about 85%. The cost benefit of such an approach was not addressed. However, only the speculation of an 85% long-term survival among patients who were discharged alive after OHCA is challenging.

In terms of medical secondary prevention, most likely this could be improved even further. Thus, only half of the patients studied by Pell et al. received beta-blockers. It seems reasonable to recommend such treatment to a majority of patients with CAD who have suffered cardiac arrest. Not much was said about the cerebral function of these patients. However, it was stated that a relatively low percentage (3-4%) had extremely poor cerebral function. These patients have previously been reported to have very low long-term survival. On the basis of randomized clinical trials, one can hope that the more widespread use of hypothermia will improve cerebral function among survivors of OHCA even further.

A fair number of people survive OHCA. The recent survey of the situation in Europe calculated that 29,000 victims of OHCA are successfully resuscitated to hospital discharge every year in Europe. This figure is a fair match with the figure from Scotland, which shows that about 150 persons are discharged from hospital each year after having suffered OHCA. This figure should then be multiplied by 759 million inhabitants in the whole of Europe divided by 5 million inhabitants in Scotland. We then reach a figure of about 23,000 survivors. However, in the Scottish survey, only OHCA with a cardiac aetiology was included, so this figure should be slightly increased in order to reach the true number of saved lives. This calculation highlights the huge number of people who can be rescued after OHCA and for whom we need to create appropriate health care programmes in order to manage them optimally in the future.
How should a proposal of this kind be designed?

(i) First of all, the majority of these patients suffer from ischaemic heart disease. Therefore, secondary prevention, including the use of statins, beta-blockers, anti-thrombotic medication (aspirin and clopidogrel), and ACE-inhibitors, should be recommended to the majority of these patients.

(ii) Furthermore, although there are no randomized trials evaluating the value of early revascularization, observational studies suggest that both coronary artery bypass grafting and percutaneous coronary intervention produce benefits. Perhaps, we should be allowed to extrapolate the evidence from patients suffering from acute coronary syndrome to the cardiac arrest population if the arrest is judged to be caused by acute coronary syndrome.

(iii) On the basis of clinical evidence, a large percentage, although not strictly defined, should receive an ICD.

(iv) Finally, a careful follow-up in terms of psychological support both for the patients as well as relatives should have priority.

The present article is important. It deals with a patient population, which has suffered from one of the most feared complications in medicine. They therefore, require a very careful follow-up by health care providers; follow-up includes not only medical and surgical treatment but also a careful psychological intervention. The article by Pell et al. shows that today the long-term prognosis for these patients is promising.

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References


